

*ANOPSILANA LINGUA*, A NEW FRESHWATER  
TROGLOBITIC ISOPOD FROM THE PALAU ISLANDS  
(FLABELLIFERA: CIROLANIDAE)

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*Abstract.*—*Anopsilana lingua*, a blind, unpigmented cirolanid isopod, is described from a natural well on Peleliu Island. It is distinguished from the nine known species of *Anopsilana* by the shape of the telson, which is very broadly rounded, in contrast to the triangular, pointed or angular telsons of the other species. *Anopsilana lingua* is the first troglobitic cirolanid reported from a Pacific Ocean locality.

Explorations of caves on Atlantic Ocean islands in recent years have revealed the presence of rich and diverse faunas of aquatic troglobites (Sket and Iliffe 1980; Iliffe et al. 1983, 1984). A summary of the species in these faunas and those of other troglobitic aquatic faunas of the world is given in the recent volume edited by Botosaneanu (1986). In contrast, the number of known troglobites from caves of Pacific Ocean islands is small. Collecting effort in Pacific caves has been much less than in Atlantic caves, and to remedy this situation, the second author led an expedition to explore and collect in Pacific island caves in 1985. One of the discoveries of this expedition was the isopod described below.

*Anopsilana lingua*, new species  
Figs. 1-3

*Material.*—Palau, Peleliu Island, Airport Well, 26 Feb 1985, leg. Thomas M. Iliffe, Jeff Bozanic, and Dennis Williams, holotype (USNM 232000) and 16 paratypes (USNM 232001); 2 Apr 1985, leg. Dennis Williams and Jeff Bozanic, 25 paratypes (USNM 232002).

*Etymology.*—From the Latin "lingua" (tongue), referring to the shape of the pleotelson.

*Description.*—Blind, unpigmented. Length of largest specimen 11 mm. Body

length/width 2.48-3.25, tending to be greater in longer specimens (Fig. 1). Head subtriangular, about  $2\times$  as wide as long, produced into small triangular rostrum between bases of antennae, rostrum not reflexed ventrally. Frontal lamina about  $2\times$  as long as wide, widening anteriorly, anterior margin rounded, posterior margin overlapped by clypeus. Clypeus short, about  $0.7\times$  length of labrum.

Pereonite 1 about  $1.5\times$  as long as each of subequal pereonites 2-4, slightly longer than each of subequal pereonites 5-7. Posterior corners of coxae 2-3 rounded, of coxae 4-7 angular; all coxae with oblique carinae.

Pleonites subequal in length; pleonite 5 overlapped laterally by pleonite 4; epimera of pleonites 1-3 pointed, of pleonite 4 rounded. Telson slightly wider than long, linguiform, posterior margin broadly rounded, armed with 10 spines between which, 3-5 plumose setae only slightly longer than spines.

Antenna 1 reaching slightly beyond posterior margin of pereonite 1; flagellum of about 12 segments, last 7 segments with 1-2-2-2-2-1-0 esthetes (counting distally). Antenna 2 reaching posterior margin of pereonite 5; peduncle segment 5 about  $1.2\times$  longer than segment 4; flagellum with 22 segments.

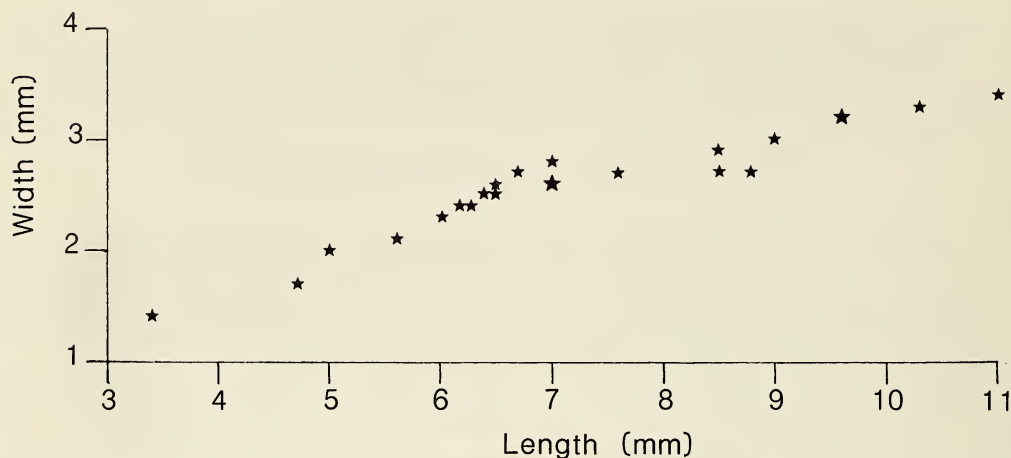


Fig. 1. Length-width relationships in *Anopsilana lingua*. Each of the larger stars represents 2 specimens with identical measurements.

Incisor of right mandible with 3 well separated cusps, incisor of left mandible with well developed anterior and posterior cusps and 3 rudimentary cusps between them; right lacinia with 11 spines; right molar with 18 spines. Exopod of maxilla 1 with 11 spines and 1 seta; endopod with 3 circumplumose spines. Maxilla 2 with 6 and 7 setae on palp and exopod, respectively; endopod with 11 setae. Maxilliped endite with 2 retinacula and 4 plumose apical setae.

Pereopod 1 merus with 3 short setulose spines on posterior margin and long setulose spine at posterodistal corner.

Pereopods 1–3 more robust than pereopods 4–7, apparently prehensile although not subchelate. Pereopod 1 shortest; merus with 3 short setulose spines on posterior margin and long setulose spine at posterodistal corner. Pereopod 2 merus posterior margin slightly concave, with group of 4 spines at proximal third and 3 longer spines at posterodistal corner. Pereopod 3 more slender; merus with proximal group of 4 spines, distal group of 3 spines, and single seta proximal to distal group. Pereopods 4–7 slender, progressively longer; bases with 2–3 broom setae; other segments except dactyl with clusters of spines at distal corners.

Pleopod 1 endopod with slightly concave lateral margin. Pleopod 2 endopod with

straight cylindrical appendix masculina extending slightly beyond apex of endopod; tip of appendix with slight subapical bulge medially and groove medial to bulge. Apex of endopods of pleopods 3–5 with medial shoulder and lateral rounded process.

Uropods reaching apex of telson; exopod slightly shorter and about half as wide as endopod; lateral margin with 7 spines, medial margin with 2 spines; apical notch symmetrical. Endopod triangular; lateral margin with 3 spines, medial margin with 4 spines; apical notch with slightly longer medial side.

*Comparisons.*—Nine species of *Anopsilana* have been described, and several other species are known and await description. Of these nine species, four have well developed eyes and need not be considered further. None of the five eyeless species has a telson that is broadly rounded posteriorly like that of *A. lingua*. The species include *A. acanthura* (Notenboom, 1981) and *A. radiculicola* (Notenboom, 1981), both transferred from *Haitilana* by Botosaneanu et al. (1986), *A. poissoni* Paulian and Delamare Deboutteville, 1956, *A. crenata* Bowman and Franz, 1982, and *A. cubensis* (Hay, 1903), the last transferred from *Troglocirolana* by Botosaneanu et al. (1986). In these five species the telson is pointed or angular. In *A. cu-*

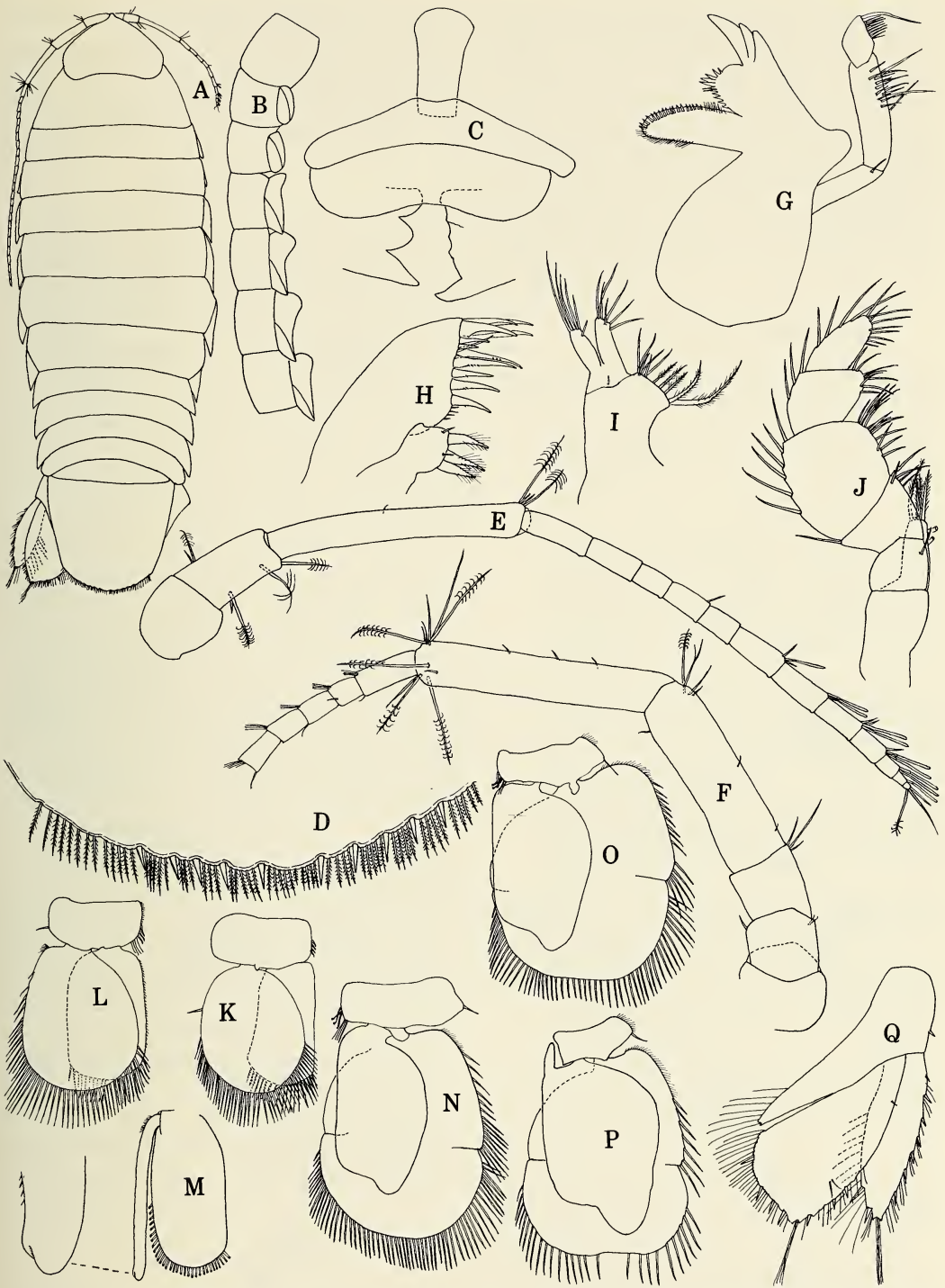


Fig. 2. *Anopsilana lingua*: A, Habitus, dorsal; B, Pereon, lateral; C, Anteroclypeal region of head, ventral; D, Posterior margin of telson, dorsal; E, Antenna 1; F, Antenna 2, peduncle and proximal segments of flagellum; G, Right mandible; H, Maxilla 1; I, Maxilla 2; J, Maxilliped; K, Pleopod 1; L, Pleopod 2 ♀; M, Pleopod 2 ♂; N, Pleopod 3; O, Pleopod 4; P, Pleopod 5; Q, Uropod.



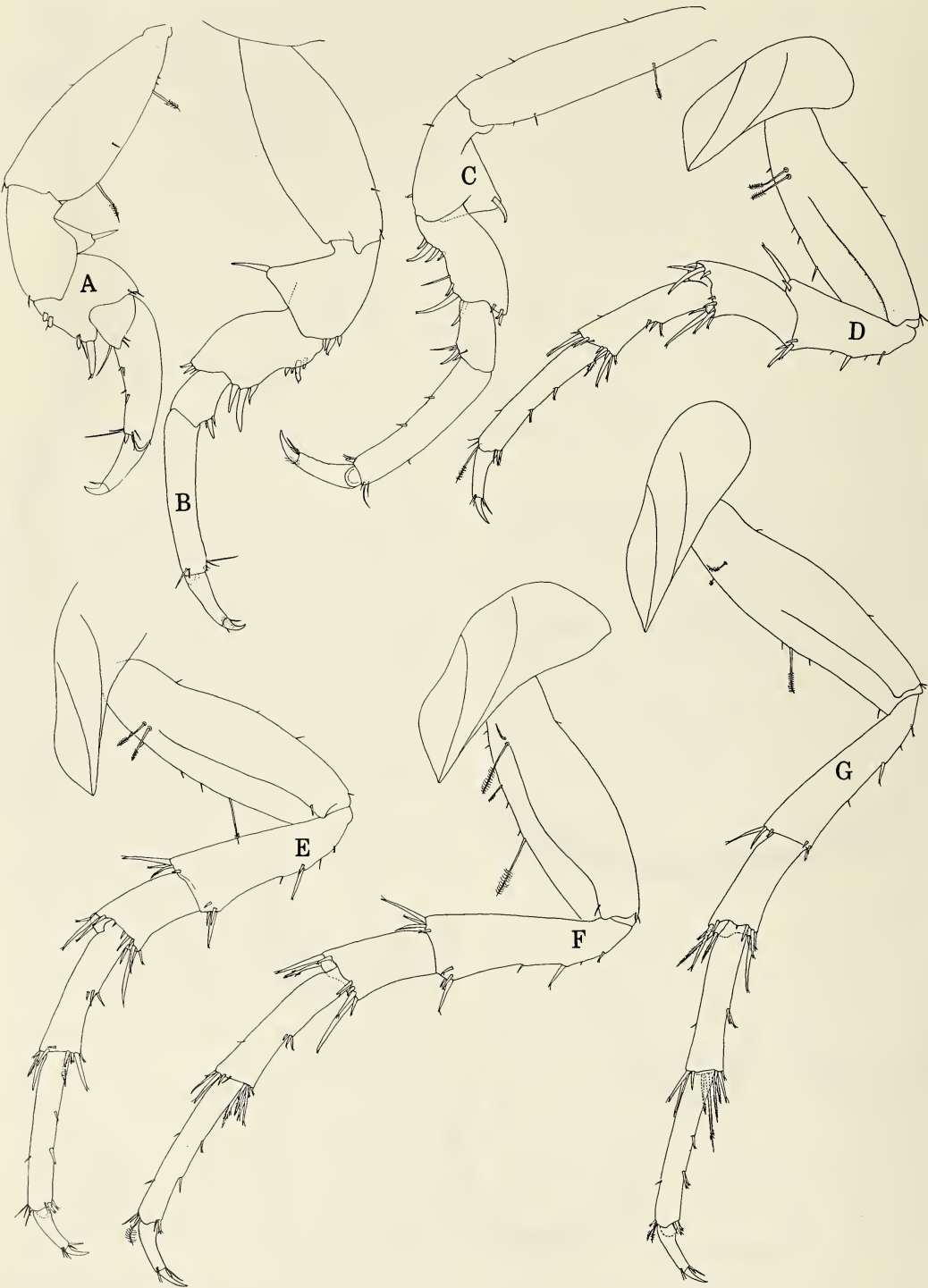


Fig. 3. *Anopsilana lingua*: A-G, Pereopods 1-7.

*bensis* it is only slightly angular, but, as in the other four species, it differs from *A. lingua* in that the marginal setae are much longer than the marginal spines, whereas in *A. lingua* they are only slightly longer.

### Habitat

Peleliu (Beliliou), located at 7°00'N, 134°15'E, is one of the major islands of the Palau Archipelago. It is composed of late Tertiary andesitic volcanics completely capped by an uplifted and karstified coral reef platform. The island has a limestone ridge along its northwest side with elevations to 75 m, but is otherwise low flat ground. Airport Well is located in the flat southcentral part of the island, 1 km inland. It is a natural well from which freshwater is pumped and is covered by a tin roof. The cenote-like entrance is a hole 2 m in diameter which flares out to a larger, water table pool 2.5 m below. The pool, several meters deep, is floored with breakdown material, and clumps of roots extend through cracks in the roof into the water. The water is very clear and receives no direct surface runoff. The cave extends out underwater along the sides of the pool to a depth of 10 m before ending in collapse.

The isopods obtained in February were collected in two ways. Six specimens were collected with a suction bottle by a diver using scuba in 3–10 m water depths where the isopods were seen swimming in the open water. The other 11 specimens were caught in a plastic bottle trap (Manning 1986) baited with a crushed hermit crab and left overnight at a depth of 5 m. Other animals collected in Airport Well included cyclopoid copepods and a blind troglobitic amphipod of the genus *Tegano*, now under study by Dr. John R. Holsinger.

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